

The Ants of the Three Kings Islands

By R. W. TAYLOR

Biological Laboratories, Harvard University*

*Formerly of the Zoology Department, University of Auckland.

INTRODUCTION

The ants reviewed below include specimens both from Great Island and South-West Island, most of the former collected by Mr. E. G. Turbott during April, 1946 or by Dr. J. S. Edwards during the summer of 1952-53; and the latter collected by Mr. Turbott during a brief visit to South-West Island in January, 1951. The material studied is from the collections of the Auckland Institute and Museum, and was originally made available to the author through the generosity of Mr. Turbott and the Museum Director Dr. G. Archey. The collectors are referred to in the discussion below by their initials.

Amblyopone australis Erichson

The extensive synonymy and the distribution of this highly variable and widespread Austro-Melanesian ant have been discussed by Brown (1958, 1960) and Wilson (1959). Its New Zealand range embraces the whole of the North Island and many of the offshore islands including Great Barrier, Little Barrier, Cuvier and Mayor Islands. New Zealand specimens cannot be consistently separated from Australian samples, and the species seems to be a relatively recent, but probably pre-European, arrival from Australia.

Material examined:—GREAT ISLAND: Castaway depot, a dealate queen from beneath a stone (E.G.T., 21/4/46). Eastern arm, Quadrat II of Turbott* (J.S.E., 1/1/53). Tasman Valley: north side, nest with cocoons, under stone in *Leptospermum* grove (E.G.T., 23/4/46); under rock (J.S.E., 30/12/52). No additional citation: (E.G.T., 15/4/46); (J.S.E., 30/12/52).

The Three Kings specimens show the same size range and frequency distribution (based on maximum head width) as mainland samples. The development of cephalic sculpturing differs, however, from that of workers from the Auckland area.

The latter show the following range of variation:—

1. Small workers (head width *circa* 1.6 mm) (fig. 1 a). Head capsule behind and lateral to the frontal carinae bearing coarse longitudinal costulae. These diverge outwards and extend to a point midway between the eyes and the occiput; they are effaced on the median and posterior parts of the head leaving a broad triangular median facial area free of costulae. The integument here is smooth and shining and bears scattered large setose punctures.
2. Large specimens (head width *circa* 2.0 mm) (fig. 1 c). The longitudinal costulae are much more extensive and almost completely obscure the shining median portion of the face.

*See Turbott, E. G., 1948, Effect of Goats on Great Island, Three Kings, with descriptions of Vegetation Quadrats., *Rec. Auc. Inst. Mus.*, 3: 259-272.

Workers of intermediate size are intergradient, the degree of sculpturing being directly proportional to individual size.

The Three Kings specimens differ in the following respects:—

1. Smallest worker (head width 1.61 mm) (fig. 1 b). The costulae do not extend as far back on the median or lateral parts of the head as do those of small Auckland specimens.
2. Largest worker (head width 2.18 mm) (fig. 1 d). The costulation is considerably reduced compared with that of large Auckland specimens; in fact, the large Three Kings workers closely resemble *small* Auckland specimens in this respect.

Regular gradation is present in workers of intermediate size.

It cannot be determined, with available material, whether clinal gradation in this character exists in intermediate Northland populations, or whether the Three Kings specimens differ consistently from all mainland ones. The former alternative is, however, strongly indicated.

Heteroponera browni Forel

The synonymy and relationships of this ant have been discussed by Brown (1958). It is an endemic New Zealand species of Australian affinities, apparently restricted to bushland areas of the northern part of the North Island, and occurring as far south as Kawhai and Coromandel (Cumber, 1959). I have samples from Little Barrier Island (J.S.E.) and Fanal Island, Mokohinau group (R. A. Harrison).

Material examined:—GREAT ISLAND: Eastern arm: Quadrat II, nest in rotting wood under stone (J.S.E., 1/1/53); a male collected in sweepings of low herbage (J.S.E., 1/1/53). West Crater Head, ex Berlese funnel sample, leaf litter, *Pittosporum* grove (J.S.E., 7/1/53). SOUTH-WEST ISLAND: Summit Ridge, ex Berlese funnel sample, leaf mould, *Meryta* forest (E.G.T., 13/1/51).

The nest collected by Dr. Edwards on Eastern arm occupied a typical site for *H. browni*, which is fairly common in some North Auckland areas, nesting in small twigs and wood fragments on the bush floor, or in rotten logs. Male and worker pupae were present in this colony, and a flying male was taken in the same area, also on 1/1/53, indicating a midsummer flight season. I have taken males and virgin queens from nests in the Auckland area during January.

Monomorium antarcticum (White)

The considerable taxonomic difficulties involving the New Zealand *Monomorium* have been discussed by Brown (1958), who applied the name *M. antarcticum* to what is very probably a complex of closely related species, widespread in New Zealand. The Three Kings specimens listed below conform to the "typical *antarcticum*" of Brown, which is common in most parts of the North Island.

Material examined:—GREAT ISLAND: Above Tasman Valley, foragers in dry grass, cliff edge (J.S.E., 4/1/53). Castaway depot: Nest with alate queens and males, under stone (E.G.T., 16/4/46); several foraging workers, beaten ex *Leptospermum* (E.G.T., 10/4/46). Eastern arm, sweepings from ground layer (J.S.E., 1/1/53). Summit ridge, (J.S.E., 3/1/53). Tasman Valley: sweepings from *Leptospermum* (J.S.E., 30/12/52); nest in humus under *Corynocarpus* (J.S.E.,

3/1/53). From Loc. A (?), nest with alate queens and males (E.G.T., 14/4/46).

Monomorium smithii Forel

The status of this species was discussed by Taylor (1959). It is a New Zealand endemic, apparently widespread in both main islands.

Material examined:—GREAT ISLAND: North West Bay, Berlese funnel sample of *Corynocarpus* and *Myroporum* leaf litter (E.G.T., 15/1/51). Tasman Valley, north side, a single queen apparently collected with a colony of *Amblyopone australis* (E.G.T., 23/4/46).

This last specimen was originally located in the collection mounted on a point with one of a nest series of *A. australis*, and presumably it was collected with them. The dorsum of its alitrunk is considerably damaged, and it seems probable that this specimen was in the *Amblyopone* nest as prey. *A. australis* is known to feed on a wide range of small arthropods, including ants.

Strumigenys perplexa (Fr. Smith)

The distribution of this peculiarly widespread species has been discussed by Brown (1958), it occurs in south eastern and south western Australia, and Norfolk and Lord Howe Islands as well as in the North Island of New Zealand. I have samples of *S. perplexa* from a number of Hauraki Gulf islands and from Great Barrier and Mayor Islands. Both of the Three Kings series are from Berlese funnel samples.

Material examined:—GREAT ISLAND: West crater head, ex leaf litter, *Pittosporum* grove (J.S.E., 7/1/53). SOUTH-WEST ISLAND: Half way down north east slope, ex *Corynocarpus* and *Meryta* leaf mould (E.G.T., 13/1/51).

Prolasius advena (Fr. Smith)

This endemic species, of Australian affinities, is widespread in both the main islands of New Zealand.

Material examined:—GREAT ISLAND: Campsite, (E.G.T., December 1945). Saddle, (J.S.E., 2/1/53). Summit, a forager on *Leptospermum* (J.S.E., 3/1/53). Tasman Valley, north side, nest under stone in *Leptospermum* grove (E.G.T., 23/4/46). Valley E. div (?), nest under stones (E.G.T., 29/4/46).

Biology: Both of the nests collected by Mr. Turbott during April 1946 contained winged males.

The ant fauna of the Three Kings Islands has clearly been derived by chance introduction from the North Island mainland. The six species listed above are all common North Auckland elements and all are endemic to New Zealand, or else are very widespread, probably pre-European, introductions into New Zealand from Australia. The faunal constitution is fairly typical of most North Auckland habitats similar to the Three Kings, with the notable absence of members of the genera *Ponera* and *Mesoponera*, which are fairly common in most open parts of the North Island, but which have apparently failed to reach the Three Kings. The absence of representatives of the many more recent commercially introduced ant species is also notable, but not surprising in view of the rarity of visits to the Islands by man.

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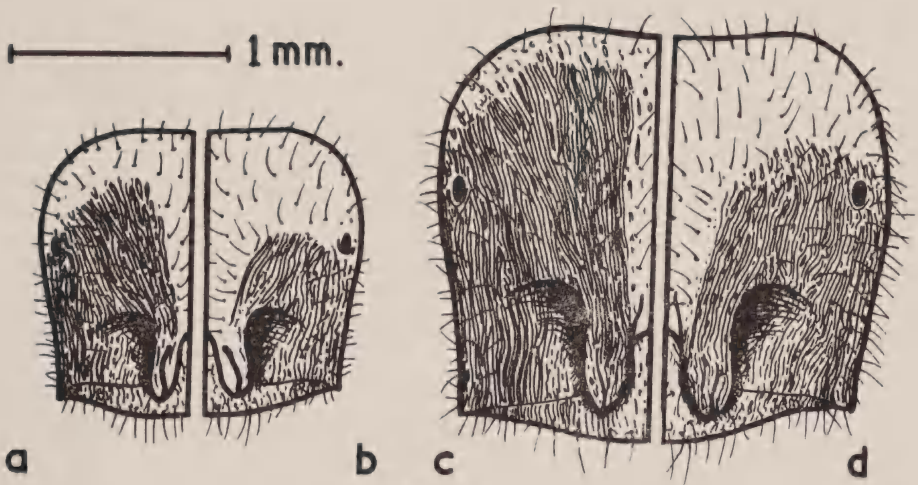


Figure 1

Amblyopone australis Erichson. Comparisons of head sculpture of small and large workers from the Auckland area, and the Three Kings Islands: *a* Small Auckland worker, *b* small Three Kings worker, *c* large Auckland worker, *d* large Three Kings worker. For further discussion see text.